

CLAIMS

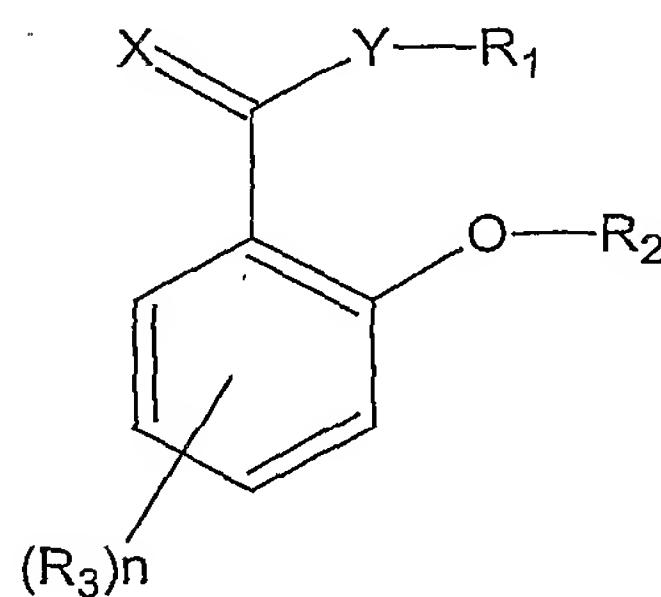
1. A blend comprising two or more compounds selected from at least two of the following groups:

- 5 i) salicylic acid and/or its functional analogous products (ESA),
- ii) promoting compounds (PRO) and
- iii) modulating compounds (MOD)

2. The blend according to claim 1, characterized in that the ESA compounds of group I) are selected from 10 salicylic acid, a compound deriving from salicylic acid and/or a mimetic compound of salicylic acid.

3. The blend according to claim 1, characterized in that the ESA compounds of group I) are selected from:

a salicylic compound having formula (I):



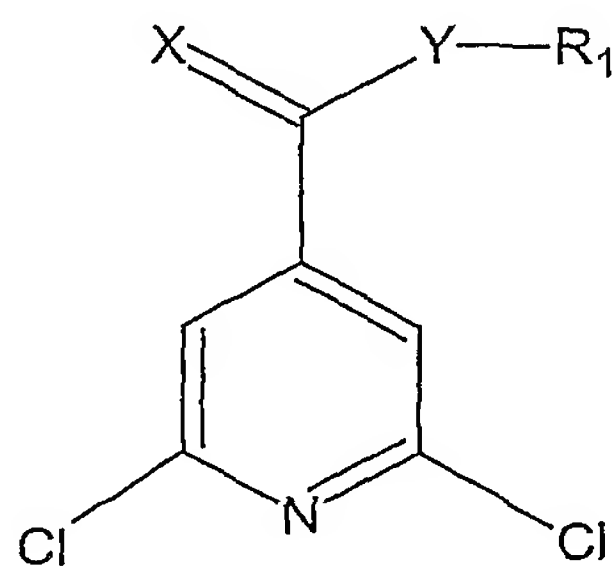
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(I)

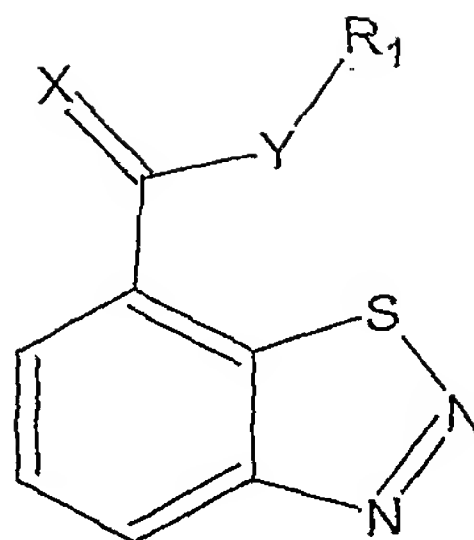
wherein:

- R₁ represents a hydrogen atom or a C₁-C₆ alkyl group, or a metal cation;
- 20 - R₂ represents a hydrogen atom or an acyl group COR', or a metal cation;

- R_1 and R_2 can jointly coordinate the same metal cation;
- R' represents a hydrogen atom or a C_1 - C_6 alkyl group, or a benzyl group optionally substituted;
- 5 - R_3 , the same or different when n is 2, represents a halogen atom, optionally selected from fluorine, chlorine, bromine and iodine, or a C_1 - C_6 alkyl group, a C_1 - C_6 alkoxy group, a C_1 - C_6 thioalkyl group, a C_1 - C_6 thioalkoxy group, a C_2 - C_7 carboalkoxy group, a
10 cyano group, a phenyl group optionally substituted, a hydroxyl group, a nitro group;
- n is a number between 0 and 2;
- X and Y , the same or different, have the meaning of oxygen or sulphur or NH;
- 15 or a mimetic compound of salicylic acid having formula (IIa) or (IIb):



(IIa)



(IIb)

wherein R_1 , X and Y have the meanings defined above.

4. The blend according to claim 3, characterized in that compounds (I), (IIa) and (IIb), when salified with metallic cations are present in any acid/metal molar ratio, depending on the valence of the metal itself.

5. The blend according to claim 4, characterized in that the acid/metal molar ratio is equal to 1:1 or 1:2 for a bivalent metal.

6. The blend according to claim 1, characterized in that the PRO promoter compounds of group ii) are selected from the sub-groups a-f:

- a: salts or oxides of metals such as sodium, lithium, potassium, magnesium, calcium, copper, zinc, iron, manganese, as sulphates, nitrates, phosphates, phosphonates or phosphites, carbonates or organic chelates, such as, for example, titanium dioxide, titanium citrate, titanium malate, zinc oxide, zinc sulphate, zinc nitrate, iron sulphate, iron nitrate, calcium sulphate, iron oxides, magnesium sulphate, copper sulphate, zinc carbonate, calcium phosphate, silica, silicic acid, iron poly-

carboxylates;

- b: dyes and pigments, such as, for example, Prussian blue, Bengal pink, phthalocyanines, metal porphyrins, natural or synthesis optical bluing products, such as, for example, esculetin, esculin, umbellipheron, stilbene derivatives;

- c: saccharides and derivatives, such as, for example, glucosamine, chitin, chitosane, glucanes, such as, for example, lamarine or glucopyranes optionally substituted with fatty acids or galactomannans, such as, for example, guar;

- d: nitroso-donor compounds, such as, for example, sodium nitroferrocyanide;

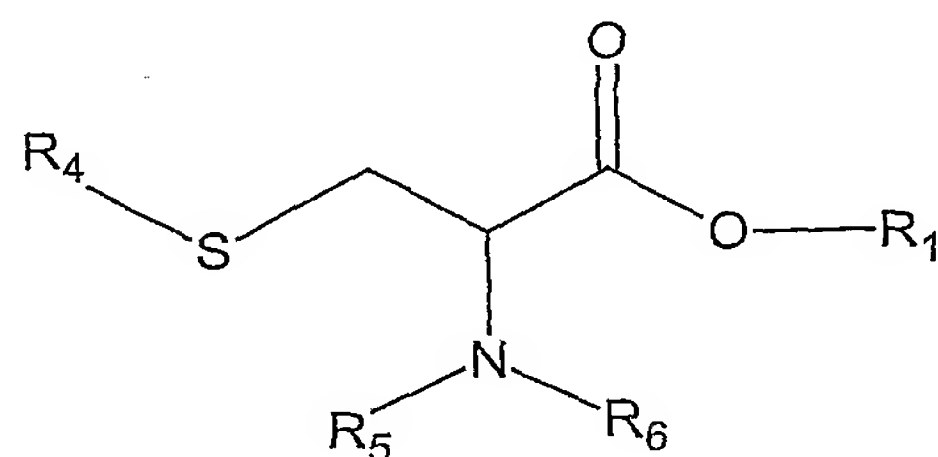
- e: organic acids and derivatives such as esters and amides, for example, aspartame and saccharin; and amino acids, such as, for example, benzoic acid, cinnamic acid, propionic acid, 1-amino-1-cyclopropanecarboxylic acid, β -aminobutyric acid (BABA), free dextrorotatory amino acids of the protein type, or incorporated in oligopeptides, or blends of said dextro- or levo-rotatory free amino acids or incorporated in oligopeptides;

- f: proteins inducing immune vegetable responses such as arpine.

7. The blend according to claim 1, characterized in

that the MOD modulating compounds of group iii) can be selected from:

glutathione (GSH), or a compound capable of favouring accumulation in vegetable tissues, 4-hydroxyproline and its derivatives, allantoin, L-glutamic acid and its derivatives, tert-butylhydroquinone, betaine, cystine, cysteine, or its derivative having formula (III):



10

(III)

wherein:

- R₁ has the meanings defined above,
 - R₄ and R₅, the same or different, can have the meaning of a hydrogen atom, a C₁-C₆ alkyl group, a methyl carboxylic group, a C₂-C₇ methyl carboalkoxylic group, an optionally substituted phenyl group,
 - R₄ and R₅, jointly, can have the meaning of the alkylidene group -(CH₂)_m-,
 - m has the value of 1 or 2,
 - R₆ represents a hydrogen atom, or an acyl COR' group.
8. The blend according to claims 3 or 7, characterized

in that the compounds having general formula (I), (IIa), (IIb) and (III) are also present in hydrate form by the coordination of any number of water molecules or are salified by organic bases, such as piperidine, piperazine, morpholine and natural amino acids.

9. The blend according to claim 1, characterized in that each compound, selected from those defined as ESA, PRO, MOD, is present in a quantity ranging from 0.5 g to 5 kg per hectare.

10. The blend according to claim 1, characterized in that each compound, selected from those defined as PRO, is in micronized form.

11. The blend according to claim 10, characterized in that the particles of the micronized form have a particle size lower than 1 micron.

12. The blend according to claim 10, characterized in that the PRO compounds are selected among compounds of sub-group a), preferably among titanium dioxide, zinc oxide, silicic acid.

13. The blend according to any of the claims from 1 to 12, comprising other active principles compatible with the ESA, PRO and MOD compounds such as other fungicides, phyto regulators, antibiotics, herbicides, insecticides, fertilizers.

14. The blend according to claim 13, characterized in

that the concentration of active principle ranges from 1 to 90%.

15. The use of a mixture comprising two or more compounds selected from at least two of the following
5 groups:

- i) salicylic acid and/or its functional analogous products (ESA),
- ii) promoting compounds (PRO) and
- iii) modulating compounds (MOD),

10 wherein ESA, PRO and MOD have the meanings according to one of the claims from 2 to 14, for stimulating the natural defence systems of plants and inducing resistance in plants.

16. The use of two or more compounds selected from at
15 least two of the following groups: one or more compounds belonging to the ESA group and/or one or more compounds belonging to the PRO group and/or one or more compounds belonging to the MOD group, wherein ESA, PRO and MOD have the meanings according to one of the claims from 2 to 14,
20 applied singly by means of applicative programs which envisage their alternating application, for stimulating the natural defence systems in plants and inducing resistance in plants.

17. The use according to claims 15 or 16, for controlling
25 phytopathogen fungi in agricultural crops of both a

curative and preventive nature.

18. A method for stimulating the natural defence systems of plants and inducing resistance in plants, which envis-
ages the application of one or more ESA compounds and/or
5 in a mixture with one or more PRO compounds and/or in a
mixture with one or more MOD compounds, wherein ESA, PRO
and MOD have the meanings according to one of the claims
from 2 to 14, either mixed with each other or individu-
ally by means of applicative programs which comprise
10 their alternating application.

19. The method according to claim 18 for controlling
phytopathogen fungi in agricultural crops of both a cura-
tive and preventive nature.

20. The method according to claim 18, wherein the appli-
15 cation of the blend is effected on all parts of the
plant, for example on the leaves, stems, branches and
roots, or on the seeds themselves before sowing, or on
the ground in which the plant grows.

21. The method according to claim 18, characterized in
20 that the quantity of each compound, selected from those
defined as ESA, PRO, MOD, to be applied, is present in a
quantity ranging from 0.5 g to 5 kg per hectare.